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## Introduction

**Research Question:** How did urban development and park habitat changes between 2016 and 2025 affect the bird species at Brooklyn Bridge Park?

**Hypothesis:** If construction reduced habitat quality since 2016, then bird diversity should be lower. If habitats improved by 2025 due to restoration, bird diversity should be higher in the 2025 BioBlitz.

**Objective:** To compare bird diversity and abundance at Brooklyn Bridge Park between 2016 and 2025 to identify which species increased or declined and determine whether habitat restoration supported more sensitive and migratory birds.

## Background

Cities are constantly changing and these changes can have major effects on wildlife. Birds are particularly sensitive because they rely on specific habitats for food, nesting, and migration. When construction occurs in urban parks, the noise, machinery, and removal of vegetation can make the area less suitable for many species. Brooklyn Bridge Park experienced extensive construction through 2016, particularly at Pier 2 uplands. The final parts of the park were completed between 2018 and 2021, accompanied by an ecological restoration effort, including the planting of thousands of trees, native meadow restorations, and wetland reconstruction. This research uses bird observations from the 2016 and 2025 BioBlitz to examine how these habitat changes influenced bird diversity and abundance in the park.

## Methods

### Data Source:

Analyzed bird observations from the 2016 and 2025 Brooklyn Bridge Park BioBlitz using iNaturalist data. These observations recorded the types of birds seen, the number of birds, and where in the park they were found.

### Data Recorded:

For each year, we counted the total number of species (species richness) and the total number of individual birds (abundance). We also noted whether each species was present or absent and tracked which species appeared in 2025 that weren't seen in 2016 and which ones disappeared.

### Construction and Habitat Assessment:

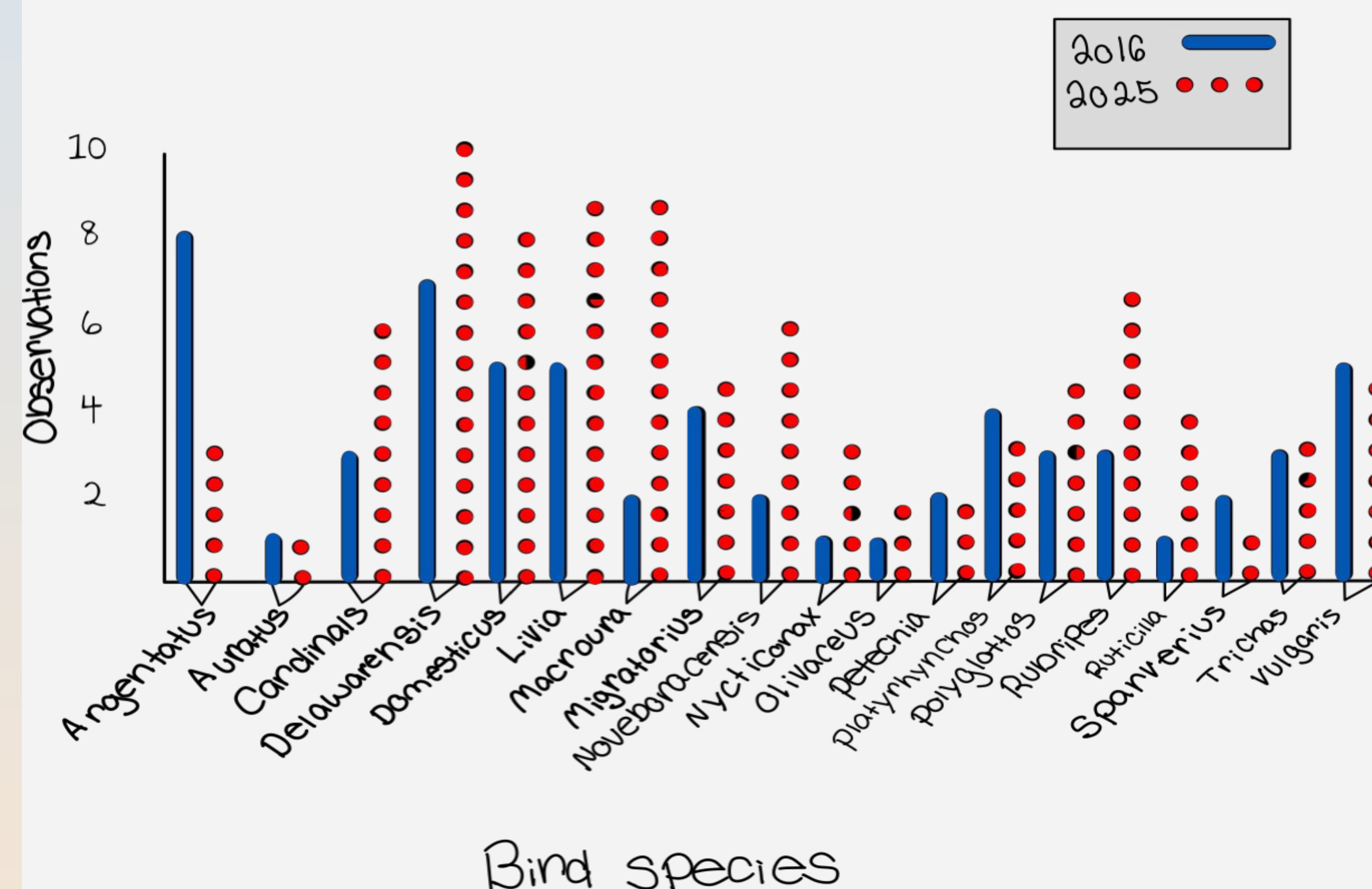
Compared the bird data to known construction timelines at the piers from 2015 to 2020. Using Google Earth and public park records, we looked at which areas were under construction and how habitats changed over time. We also considered restoration efforts like planting trees, creating native meadows, and restoring wetlands to see how these improvements affected bird diversity and abundance.

## Data and Results



## THROUGH THE YEARS

Bioblitz Species Comparison: 2016 vs 2025



## Research Limitations

The BioBlitz relies on volunteers and is not a standardized scientific survey, which limits how confidently the data can be interpreted.

- Observer skill, group size, and overall effort differed between 2016 and 2025.
- Weather conditions, time of day, and migration timing varied each year and could not be controlled.
- BioBlitz data record immediate presence of birds, not true population size so some counts, especially for large flocks like Ring-billed Gulls were estimates rather than exact numbers.
- No direct measurements of construction noise or habitat disturbance were available for 2016, making it harder to confirm the exact impact.

**These limitations mean correlations can be identified, but causation cannot be proven with complete certainty.**

## Conclusion

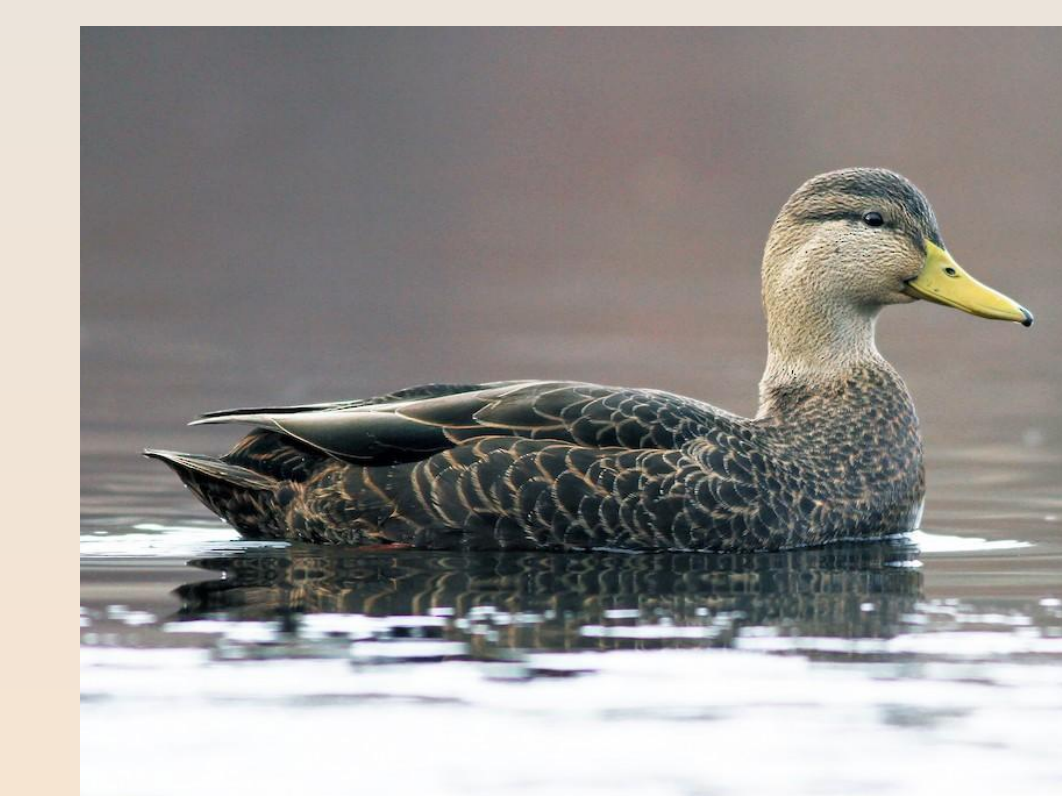
The bird data from Brooklyn Bridge Park show clear changes between 2016 and 2025, which can be linked to construction and habitat restoration. In 2016, during active construction, the park was mostly home to urban tolerant species like *Sturnus vulgaris* (European Starling), *Passer domesticus* (House Sparrow), and *Columba livia* (Rock Pigeon). Sensitive and migratory species were largely absent likely due to noise, human disturbance, and reduced vegetation. By 2025, construction had ended and restoration efforts added trees, shrubs, native flowers, and wetland areas, providing more shelter, food, and safe spaces for birds.

This improvement allowed habitat sensitive and migratory species such as *Nycticorax nycticorax* (Black-crowned Night Heron), *Cardinalis cardinalis* (Northern Cardinal), *Mimus polyglottos* (Northern Mockingbird), *Setophaga olivacea* (Olive Warbler), *Cardinalis rubripes* (Black-headed Grosbeak), and *Turdus ruficollis* (Red-throated Thrush) to return or increase in number. Some urban tolerant species like the European Starling, House Sparrow, and Rock Pigeon remained and even increased, showing that generalist birds thrive in human modified areas.

Overall, total bird numbers stayed high, but the mix of species changed. Although the research had limitations, the results clearly show that construction temporarily reduced habitat quality for sensitive birds, but restoration efforts helped restore a more diverse and balanced bird community.

## Future Directions

Future studies at Brooklyn Bridge Park could expand on these findings by conducting more standardized bird surveys throughout different seasons and years. Regular monitoring would help track migration patterns, population trends, and the long term effects of habitat restoration. Researchers could also focus on specific habitat types such as wetlands, meadows, or tree canopies to determine which restoration practices are most effective at supporting diverse bird species. Additionally, studying the impact of nearby urban development, human activity, and noise on bird behavior could provide insight into how city parks can be designed to better support wildlife.



## References

1. *Pier 2 Uplands Opens July 6, 2020*. Brooklyn Bridge Park. (2024, January 4). <https://brooklynbridgepark.org/press-releases/pier-2-uplands-opens-july-6-2020/>
2. *Project development*. Brooklyn Bridge Park. (2024, June 20). <https://brooklynbridgepark.org/about/brooklyn-bridge-park-corporation/project-development/>
3. Zhang, Y., Ye, E., Liu, F., Lai, N., You, X., Dong, J., & Dong, J. (2023, March 3). *The relationship between landscape construction and Bird Diversity: A Bibliometric analysis*. International journal of environmental research and public health. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10001572/>